



# How Strong Is Your Tinder Game? Strategic Two-Sided Search in Swipe-Based Dating App Markets

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## Abstract

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# 1 Introduction

## Points to discuss on introduction

- What is Tinder? (brief)
  - When was it started?
  - What is swiping?
  - How popular it is?
- Why does Tinder pose an interesting economic problem?
  - Stage interaction
  - Platform features: budgets, observability, directed search, asynchronicity
  - Repeated games: curse of dimensionality, beliefs and meta-beliefs
- What and how does this paper study?
  - Model of two-sided search with strategic considerations
  - Equilibrium refinement, computation, and analysis
  - Planner considerations on directed search and budget setting
- What does this paper contribute?
  - First model to address budgeted search in Tinder?
  - First model to combine idiosyncrasy and pizzaz
  - Case study for the use of computational techniques in

## 1.1 Related Work

- Searching and Matching
  - Gale and Shapley (1962), Roth and Sotomayor (1992)
  - Two-sided: Burdett and Wright (1998), Chade (2006), Smith, Adachi
  - **Does not consider budgets**
    - \* ... important as this is a way for planners to influence outcomes
- Mean-Field Game Theory: Iyer et al. (2014), Gummadi et al. (2013), Jovanovic and Rosenthal (1988)
  - No models on MFG for Tinder
- Modern Dating Apps: Olmeda (2021), Kanoria and Saban (2021)
  - Not models where behaviour is derived from rational utility-maximizing assumptions

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## 2 Model

### 2.1 Setup

- Who are the players?
  - Disjoint sets of men and women in the platform
  - They have pizzaz type  $\mu, \omega \in [0, 1]$
- What do they do?
  - They get anonymously and sequentially partnered up
  - To their knowledge, this happens in a random manner.
  - They observe the suggestion's attractiveness  $\theta \in [0, 1]$
  - They can choose to swipe left or right, thus  $\mathcal{A} = \{0, 1\}$ .
  - If they both swipe right on each other, they match. Note this doesn't mean they leave.
- What do they know?
  - Equally agents face a cap on the number of right swipes they have
  - $B_m$  for men and
- What are their preferences?

### 2.2 The Dating Market

- Entry flows
- Leaves (including geometric lifetime)
- Distribution

### 2.3 The Search Problem

## 3 Equilibrium

### 3.1 Steady-State Equilibrium

### 3.2 Numerical Computation

### 3.3 Comparative Statics

## 4 Playing Cupid

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## 4.1 Directed Search: PageRank Suggestions

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## 5 Conclusion

In this chapter we shall do a reference to an entry in the bibliography, `bibliography.bib`.

What we know of the invention of the flux capacitor is that Dr. Emmett Brown thought of this when hanging a clock in the bathroom. He was standing on his porcelain sink and slipped because it was wet, the resulting hit on the head was apparently a cause to this invention Brown (1955).

### 5.1 Future Work

The corresponding sketch made on this day has been attached in appendix ??.

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## A Uniqueness and Existence of Search Problem